

**AMENDMENTS TO THE CLAIMS**

Please cancel claims 4, 8, 9, 15, and 25-32.

Please amend the following claims:

1. (Currently Amended) An integrated optical waveguide interferometer capable of detecting the amount of or changes in a stimulus of interest comprising:  
a sensing waveguide ~~capable of~~ exhibiting a measurable response to a change in a localized environment caused by the introduction of or changes in the stimulus of interest, said sensing waveguide having a variation in optical path length of a path of interaction, wherein the variation in optical path length of the path of interaction is sufficient to ensure a variation in phase change caused by the introduction of or changes in the stimulus of interest of  $< 2\pi$  and is provided by a variation in its geometrical length or by a variation in its refractive index. a path of interaction of variable optical length.

2. (Original) An integrated optical waveguide interferometer as claimed in claim 1 further including:  
one or more sensing layers capable of inducing in the sensing waveguide a measurable response to a change in the localized environment caused by the introduction of or changes in the stimulus of interest.

3. (Original) An integrated optical waveguide interferometer as claimed in claim 2 further comprising:  
an inactive waveguide in which the sensing layer is substantially incapable of inducing a measurable response to a change in the localized environment caused by the introduction of or changes in the stimulus of interest.

4. (Canceled)

5. (Previously Amended) An integrated optical waveguide interferometer as claimed in claim 1 wherein the path of interaction is stepped.

6. (Previously Amended) An integrated optical waveguide interferometer as claimed in claim 1 wherein the path of interaction is of dual optical length.

7. (Original) An integrated optical waveguide interferometer as claimed in claim 6 wherein the difference in dual optical length is sufficient to ensure a difference in phase change caused by the introduction of or changes in the stimulus of interest of  $< 2\pi$ .

8. (Canceled)

9. (Canceled)

10. (Currently Amended) An integrated optical waveguide interferometer as claimed in claim 1 [[8]] wherein the variation in geometrical length of the path of interaction is stepped.

11. (Currently Amended) An integrated optical waveguide interferometer as claimed in claim 1 [[8]] wherein the path of interaction is of dual geometrical length.

12. (Original) An integrated optical waveguide interferometer as claimed in claim 11 wherein the difference in dual geometrical length is sufficient to ensure a difference in phase change caused by the introduction of or changes in the stimulus of interest of  $< 2\pi$ .

13. (Currently Amended) An integrated optical waveguide interferometer as claimed in claim 1 [[8]] wherein the variation in the geometrical length of the path of interaction is continuous.

14. (Original) An integrated optical waveguide interferometer as claimed in claim 13 wherein the path of interaction has a gradient.

15. (Canceled)

16. (Currently Amended) An integrated optical waveguide interferometer as claimed in claim 1 [[15]] wherein the refractive index is varied intrinsically by varying the composition of the material of the sensing waveguide.

17. (Original) An integrated optical waveguide interferometer as claimed in claim 16 wherein the sensing waveguide is composed of two or more discrete portions of material of differing composition.

18. (Previously Amended) An integrated optical waveguide interferometer as claimed in claim 16 wherein the sensing waveguide is of dual composition.

19. (Currently Amended) An integrated optical waveguide interferometer as claimed in claim 1 ~~[[45]]~~ wherein the refractive index is varied dimensionally.

20. (Original) An integrated optical waveguide interferometer as claimed in claim 19 wherein the refractive index is varied dimensionally by varying the thickness of the sensing waveguide.

21. (Previously Amended) An integrated optical waveguide interferometer as claimed in claim 19 wherein the sensing waveguide is of dual thickness.

22. (Currently Amended) An integrated optical waveguide interferometer as claimed in claim 1 further comprising a capping layer adapted to define the variation in optical path length of the path of interaction. ~~path of interaction of variable optical length.~~

23. (Original) An integrated optical waveguide interferometer as claimed in claim 22 wherein the capping layer incorporates a window which bounds the localized environment.

24. (Original) An integrated optical waveguide interferometer as claimed in claim 23 wherein the window bounds a medium so that the capping layer defines a path of interaction of at least dual optical length in which a first part of a modal field interacts with the medium in the window and a second part of the modal field interacts with the medium of the capping layer.

25-32. (Canceled)